May 22, 2007

UDOT STATEWIDE ESTIMATE REVIEW PROCESS

Goal

Provide a process to review Engineer's Estimates so:

- All projects are awardable and below 110% of the Engineer's estimate.
- The low bid will be within ±10% of the engineer's estimate for at least 50% of All UDOT projects.

General Statement

Document and check all design, details, quantities, and costs according to the procedures outlined in the UDOT Quality Control/Quality Assurance Guidelines. Consultant designed projects will follow the same process as UDOT designed projects. The Design Consultant will provide the QC review of their estimates.

Definitions

Estimate Quality Control (QC): The ongoing, comprehensive, independent checking and verification of the activities that lead to a final product that is ready to advertise.

1. QC personnel are responsible to:
    a. Check quantities.
    b. Check unit costs.
    c. Review supporting documentation for unit costs.
    d. Check Red Flag Analysis if applicable.
    e. Meet with the Design Engineer and Project Manager to review discrepancies, and reach a consensus on unit costs.
    f. Verify that the estimate is on target for project delivery after a budget has been established and identify areas of concern. Advise the Project Manager if the project funding is insufficient. The PM can investigate cutting the scope if applicable, consider additives/alternate bids, or seek additional funding through appropriate channels based on this information.
    g. File QC and estimate documentation in the project file.

Red Flag Analysis: Use to incorporate market volatility into the Engineer's Estimate. PDBS provides a module that is used to document application or non application of these factors. Prior to the creation of a PDBS estimate, this analysis can take place in a spreadsheet.

Estimating guidelines:

The following are some general guidelines for developing unit costs. See the latest revision of the UDOT Roadway Design Manual of Instruction for additional estimating guidance. There is no substitute for using sound engineering judgment when estimating project costs.

1. Use "Estimator's Corner" on the UDOT website, which contains lessons learned, market trends, and contractor input and availability.
2. Contact local contractors on specific items of work to gauge current costs and availability. Contractors appreciate hearing about upcoming projects. This helps get more bidders and better bids.
3. Compare PDBS data and abstracts from previous projects of similar locality, size, and scope.
4. After the estimate is input into PDBS use the price comparison report to provide a quick method to evaluate project unit prices against region, or if region data is not available, statewide averages. Use caution in applying this report since it does not currently use quantity as a factor.

Concept Phase

1. Use the concept estimate spreadsheet from the "Concept Phase Design Process" to develop the initial cost estimate for the proposed project.

2. Gather the cost estimates from the individual departments responsible for each area such as roadway cost from Roadway Design, structures cost from Structures, drainage cost from Hydraulics, utilities cost from Utilities, etc.

3. Compile an estimate for the major items on the project. Document how unit costs were developed such as average unit bid prices, actual bid prices from a similar project, etc. Add additional sheets to the concept spreadsheet as necessary for documentation.

4. Conduct a Red Flag Analysis on the estimate. The Red Flag Analysis may be eliminated or any Red Flag cost increases may be overridden with thorough documentation.

5. Add a contingency for unknown items, miscellaneous items, and inflation in addition to the 10 percent of construction costs change order contingency required at the time of advertising. Use the Concept Cost Estimate Form with current values established on an annual basis by UDOT Project Development Division to calculate inflation.

6. Use a reviewer who was not involved in creating the estimate to provide QC for the estimate as defined above.

7. Ask the Concept Team to review the estimate and provide input.

8. Have the appropriate personnel review the estimate and sign the concept report.

9. Update estimates every year for projects listed on Region Concept Development Lists following steps 2-7.

Scoping Phase

1. Add additional items as more information becomes available and scope narrows.

2. Revise the Concept Phase estimate using steps 2-6 of the Concept Phase estimating process.

3. Ask the project team to review the estimate and provide input.

4. Revise contingency and inflation percentages in the estimate using the latest values provided by UDOT in the Concept Cost Estimate Form.

Plan-in-Hand

1. Develop Plan-in-Hand estimate using the Scoping Phase estimate and new information obtained during the preliminary project design. Produce backup documentation for unit costs.

2. Place current known items of work in PDBS to facilitate use of the Red Flag Module.

3. Conduct a Red Flag Analysis on the estimate. The Red Flag Analysis may be eliminated or any Red Flag cost increases may be overridden with thorough documentation. Provide an explanation in the notes section of the Red Flag module in PDBS.

4. Utilize the estimating guidelines described in the definitions section of this document.

5. Revise contingency and inflation percentages in the estimate using the latest information provided by UDOT in the Concept Cost Estimate Form.

6. Perform QC services as defined above for the estimate by a reviewer who was not involved in creating the estimate.

7. Designer files the PDBS Engineer's Estimate and documents supporting unit costs in the project folder.

8. Project Manager determines if a Constructability Review is warranted directly after the Plan-in-Hand review meeting. Revise estimate if a Constructability Review is completed.

PS&E

1. Update the PDBS estimate by adding items identified since Plan in Hand with corresponding unit costs and quantities. Each division is responsible for entering its own estimate such as Roadway for roadway items, Structures for structures items, Hydraulics for drainage items, Consultants for items designed by them, etc.

2. Utilize the estimating guidelines described in the definitions section of this document for new items and to update other unit costs as necessary.

3. Update the Plan in Hand Red Flag Analysis on the estimate. The Red Flag Analysis may be eliminated or any Red Flag cost increases may be overridden with thorough documentation. Provide an explanation in the notes section of the Red Flag module in PDBS.

4. Provide QC services as defined above for the estimate by a reviewer who was not involved in creating the estimate after the Red Flag Analysis is updated.

5. The project team reviews the Engineer's Estimate during the review period prior to the PS&E meeting and gives comments at the PS&E meeting about quantities, unit costs, and measurement. The Project Manager and Design Engineer review the comments and make necessary changes.

6. Designer and Project Manager evaluate the design and advertising schedules at PS&E to determine how much, if any, inflation to leave in the Engineer's Estimate.

7. Designer files the PDBS Engineer's Estimate and documents supporting unit costs in the project folder.

Advertisement

1. Complete the Engineers Estimate.

2. Utilize the estimating guidelines described in the definitions section of this document for items that have changed, or if conditions dictate reevaluating any items.

,

3. Perform QC services on items that have changed since PS&E as defined above.

4. Project Manager and Design Engineer come to a consensus on the project cost.

5. Designer files the PDBS Engineer's Estimate and documents supporting unit costs in the project folder.

6. Submit the project to advertisement.

7. Project Manager independently monitors plan holders and contractors input during the bidding process and facilitates necessary changes.

After Bid Opening

1. Review the estimate with the Preconstruction Engineer, Project Manager, Design Team Leaders, and Design Engineers who worked on the project and compare it to the Contractors' bids to gauge estimating performance and discuss lessons learned to be applied on future project estimates.

2. The Designer and Project Manager provide the lessons learned to Engineering Services in the form of an email or memorandum for statewide distribution.

Documentation Notes:

Provide a section in the project file for all documentation. This documentation will provide a history of the estimate as it changes throughout the project. Document all milestone estimates and how costs were determined for specific items and backup documentation for unit costs. One suggestion is a milestone spreadsheet with columns listing how the costs were determined such as average PDBS cost for the last year, cost from the XXXX project that is similar in scope, or average PDBS cost inflated 15 percent because of project location.